

Notice of Allowability

Application No.

10/661,831

Examiner

Tod T. Van Roy

Applicant(s)

HU ET AL.

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to a phone interview on 08/11/2006.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tom Engellenner on 08/11/2006.

The application has been amended as follows:

In claim 27, at line 7:

"Terahertz, electrons...", and has been changed to:

- - - Terahertz, such that a radiative lasing transition between said upper lasing state and said lower lasing state is spatially vertical, and electrons... - - -

In claim 27, at line 7:

"...exhibiting...", and has been changed to:

- - - exhibit - - -

In claim 27, at line 9:

"wherein the laser...", and has been changed to:

- - - wherein a rate of relaxation of said lower lasing state into the relaxation state is at least about 5 times higher than a corresponding rate associated with the upper lasing state, and the laser... - - -

In claim 28, at line 7:

“exhibiting a radiative...”, and has been changed to:

--- exhibiting a spatially vertical radiative... ---.

The following is an examiner's statement of reasons for allowance:

Claims 1, 4, 24, 25, and 27-28 are believed to be allowable as a quantum cascade laser/amplifier operating in the 1-10THz regime having a radiative output associated with a spatially vertical transition between the upper and lower lasing states, and additionally having a ratio of the upper lasing state lifetime to the lower lasing state lifetime of at least 5 was not found to be taught in the prior art. The prior art, such as that found in the applicant submitted IDS, was found to teach 1-10THz emitters having spatially vertical radiative transitions, however, failed to teach the claimed upper and lower lifetime ratio. US 6829269 was found to teach the stated lifetime ratio in a 1-10THz emitter, but taught away from using intrawell (spatially vertical) radiative transitions in favor of interwell (diagonal) transitions. For these reasons it is believed that the combination of the 1-10THz range, spatially vertical radiative transition, and the lifetime ratio constitute novel claims as the prior art was not found to teach the limitations as a whole, and failed to provide motivation for their combination.

Claims 2-3, 5-23, and 26 are allowable as they depend from the allowable claims above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

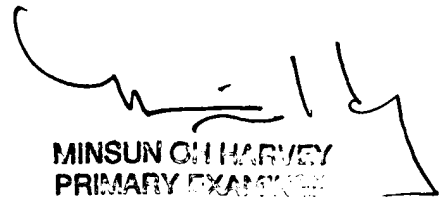
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/661,831

Page 5

Art Unit: 2828

TVR


MINSUN OH HARVEY
PRIMARY EXAMINER